



NASA'S NEAR EARTH NETWORK (NEN) AS3 ANTENNA DEPLOYMENT PROJECT

WHAT IS THE AS3 DEPLOYMENT PROJECT ?

NASA's Near Earth Network (NEN) is the premiere ground-based communication network, which has been providing high-quality communication support since the agency's first satellite mission in 1958. Over the years the network has evolved and advanced to meet the ever-changing communication needs of its customers. The NEN provides Telemetry, Tracking, and Commanding (TT&C) services to an extensive and diverse customer base, which includes approximately 35 missions - from the high-rate Earth Observing System (EOS) missions such as Aqua, Aura, ICESAT, and QuikSCAT, to Small Explorer (SMEX) missions including GALEX, SWAS, SWIFT, TIMED and TRACE.

Today, the NEN utilizes a diverse set of resources to provide high-quality services at the lowest cost to support space-assets. A key enabler to providing low cost services is the NEN's unique business practice of carefully blending the use of antennas operated by international space agencies and commercial partners with NASA-owned assets to fulfill the changing needs of the NEN-supported mission communication requirements. NEN ground stations are distributed throughout the world in locations including Svalbard, Norway; Kiruna, Sweden; Santiago, Chile; McMurdo, Antarctica; Wallops Island, Virginia; South Point, Hawaii; Dongara, Australia; and White Sands, New Mexico.



The Alaska Satellite Facility uses the 10-Meter receiving antenna on top of UAF's Elvey Building, at right, on the west ridge of the UAF campus.

Photo Credit: Ned Rozell

One of these locations is the Alaska Satellite Facility (ASF) at the University of Alaska Fairbanks' Geophysical Institute. This facility was established in 1991 and is responsible for downlinking, processing, archiving and distributing remote-sensing data to scientific users around the world. ASF currently operates two antennas for the NEN: one 10-meter S/X-band antenna and one 11-meter S/X-band antenna. The antennas at ASF are in a prime polar location, enabling them to provide service to high-inclination polar-orbiting Earth-imaging spacecraft.

tracking capabilities. As a result, the NEN conducted a trade study to examine the costs and risks of upgrading the current 10-meter system or procuring a new 11-meter system. In order to meet the NEN objectives, it was determined the best course of action was to replace the ASF 10-meter unit with a new 11 meter S/X-band system.

This new antenna (AS3), designed by L-3 Datron, will have an 11-meter parabolic reflector and a shaped hyperbolic tri-band sub-reflector with surface tolerances required for efficient Ka-band operation. This provides the ability for greater incremental upgradability and the prevention of operational downtime. Additionally, the use of a Ka-band capable antenna reflector will enhance X-band performance and allow the possibility for future upgrade to Ka-band.

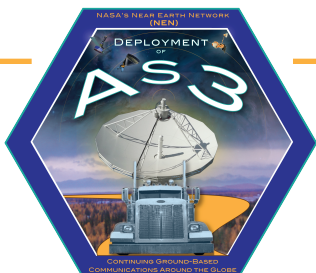


The 11-Meter, AS3 antenna system after completion of the factory assembly during an X-Band tracking exercise.

Photo Credit: L-3 Datron

The antenna is being built and assembled at the L-3 Datron Advanced Technologies facility in Simi Valley, California. Upon successful completion of Factory Acceptance Testing (FAT), the antenna will then be disassembled and transported using four separate tractor-trailers. The transport route will take the AS3 antenna up the west coast of the United States, through two Canadian provinces, covering a total 3,200 miles before reaching its final destination in Fairbanks, Alaska.

This antenna will bring many years of continued communication support to the NEN customer base, and we want to share its progress with you! Over the coming months we will be sharing updates on the build and transport of AS3, as well as the ASF site transformation as we prepare for the installation of the NEN's newest antenna. We will be posting fun facts and graphics onto our social media sites and even taking you along for the ride as we transport this large antenna to the installation site. We may even play a little road-trip trivia along the way!



Stay tuned for more information about the AS3 deployment project by visiting:

The NEN website: <http://esc.gsfc.nasa.gov/space-communications/NEN.html>

The ESC facebook page: <https://www.facebook.com/NASA.ESC>

And the ESC twitter feed: [@NASA_GSFC_ESC](https://twitter.com/NASA_GSFC_ESC)